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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/716,885	11/18/2003	Minoru Kumagai	03699/LH	8690
1933 7590 05/30/2007 FRISHAUF, HOLTZ, GOODMAN & CHICK, PC 220 Fifth Avenue 16TH Floor NEW YORK, NY 10001-7708			EXAMINER LIN, JAMES	
			ART UNIT 1762	PAPER NUMBER
			MAIL DATE 05/30/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/716,885	Applicant(s) KUMAGAI ET AL.	
	Examiner Jimmy Lin	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/18/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of Invention II, claims 9-19 in the reply filed on 3/27/2007 is acknowledged.
2. The Applicant traverses the election of species requirement between Species I and Species II on pg. 2. This argument is convincing and the election of species requirement has been withdrawn.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 9-10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiroki et al. (U.S. Publication No. 2001/0023661).

Hiroki discloses a method of making an electroluminescent (EL) display. The EL device can have an EL layer 350 (i.e., an optical element) sandwiched between a first electrode 348 and a second electrode 351 (Figs. 6B-6C). The EL material is deposited onto the substrate via an ink-jet printing method. The nozzles of the ink-jet head portion can contact banks 121 on the substrate, thereby applying the EL material onto the substrate through capillary action. The contacting portion can be a metal or plastic material ([0189]-[0192]; Figs. 13A-13C).

Metal and plastic are well known to have their wettability changed, e.g., by exposure to plasma treatment or ultraviolet radiation. The claims merely require a "wettability changeable layer" and do not require an active step of changing the wettability.

As to the limitation of "a droplet of an optical material containing liquid sticks in accordance with a pattern", the pattern is interpreted to be the nozzles placed in predetermined positions on the ink-jet head. The liquid would necessarily "stick" to the nozzles due to surface tension.

The ink-jet head portion 124 is interpreted to be the plate as required by the claim.

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Claim 10: The EL material is deposited onto the first electrode 120a (Fig. 13C).

Claim 12: The EL layer can be a four-layer structure including charge transport materials and light-emitting materials [0145].

5. Claims 9-10 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Van Rijn et al. (WO 2002/43937).

Van Rijn discloses a method of making an EL display having an EL layer (i.e., an optical element) sandwiched between a first and a second electrode (pg. 19, lines 12-28). The EL material can be formed onto the substrate using a micro-printing technique (pg. 19, lines 31-34). Van Rijn teaches that the micro-printing method comprises a stamp having ink attracting and ink repelling regions. The stamp is brought into contact with the substrate to transfer the droplet and to form an EL layer (pg. 25, lines 16-24; Fig. 20B). The stamp is interpreted to be the plate as required in the claims.

Van Rijn teaches that plasma treatments can be used to form hydrophobic and hydrophilic regions (pg. 4, lines 40-42).

Claim 10: The EL material is deposited onto the first electrode.

Claim 14: The micro-printing technique can comprise the use of three stamps (pg. 19, lines 31-32).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

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the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroki '661 in view of Kimura et al. (U.S. Publication No. 2002/0075422).

Claim 11: Hiroki is discussed above, but does not explicitly teach a wettability changeable layer on the substrate having a lyophilic portion formed on each first electrode section and a liquid repellent portion formed on a portion between the plurality of first electrode sections. However, Kimura teaches that enhancing the lyophilicity of the predetermined deposition positions with respect to the peripheries thereof can improve the precision of patterning while maintaining low costs and high throughput [0057]. The step of enhancing the lyophilicity at the deposition areas can be combined with the step of enhancing the repellency of the peripheries thereof [0058]. Accordingly, the deposition process of Hiroki is intended to discharge materials into the area between the banks while not discharging materials onto the top of the banks. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have made the upper bank surfaces of Hiroki water repellent relative to the side surfaces of the bank and the electrode. One would have been motivated to do so in order to have manufactured an EL display with high patterning precision. The side surfaces of the bank are interpreted to be the lyophilic portion over the electrode section because the side surface is relatively lyophilic compared to the water repellent top surface.

Claim 13: Hiroki does not explicitly teach a step of forming a second wettability changeable layer on the first electrode and irradiating the layer with an active ray irradiation step.

The Examiner takes Official Notice that it was well known in the art of EL devices to have formed a first electrode using two different conductive layers (i.e., the first electrode comprising of a lower layer and an upper layer). The lower conductive layer is interpreted to be the claimed first electrode, and the upper conductive layer is interpreted to be the claimed wettability changeable layer. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used two conductive layers as the first electrode layer of Hiroki with a reasonable expectation of success because such EL configurations are well known

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in the art. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Kimura teaches that the lyophilicity of the deposition areas (i.e., the area of the first electrodes) can be enhanced, as discussed above. The lyophilicity can be enhanced via irradiation of ultraviolet light [0079]. It would have been obvious to one of ordinary skill in the art at the time of invention to have increased the lyophilicity of the deposition area of Hiroki. One would have been motivated to do so in order to have manufactured an EL display with high patterning precision.

9. Claims 11, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rijn '937 in view of Kimura '422 for substantially the same reasons as discussed immediately above.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rijn '937 in view of Hiroki '661.

Van Rijn is discussed above, but does not explicitly teach that the EL layer can comprise of a charge transport layer and a light-emitting layer. However, Hiroki teaches that the EL layer can be a four-layer structure including charge transport materials and light-emitting materials [0145]. It would have been obvious to one of ordinary skill in the art at the time of invention to have used a four-layer structure for the EL layer of Van Rijn comprising a charge transport layer and a light-emitting layer with a reasonable expectation of success because Hiroki teaches that such EL structures are operable in the art.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroki '661 in view of Katagami et al. (U.S. Publication No. 2002/0105688).

Hiroki is discussed above, but does not explicitly teach a second plate (i.e., a second ink-jet head). However Katagami teaches a method of making an EL device (abstract), wherein the discharge material is ejected onto to the substrate via a plurality of ink-jet heads, which shortens the deposition time when compared to using only a single head [0017]. EL material can be

discharged through the plurality of ink-jet heads [0029]. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a plurality of ink-jet heads in the process of discharging the EL material of Hiroki through an ink-jet head. One would have been motivated to do so in order to have increased the rate of production. The second ink-jet head is interpreted to be the second plate.

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroki '661 in view of Kimura '422 as applied to claim 13 above, and further in view of Katagami '688.

Hiroki and Kimura are discussed above, but do not explicitly teach a second plate (i.e., a second ink-jet head). However, such is obvious over Katagami as discussed above.

13. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroki '661 in view of Yamazaki et al. (U.S. Patent No. 6,830,494).

Hiroki is discussed above, but does not explicitly teach that the bank partitions surround the electrodes. Hiroki only teaches that the banks are patterned in stripes, thereby only running enclosing two sides of an electrode (Fig. 13A). However, Yamazaki teaches that the patterning of the bank partitions in a rectangular shape is an operable equivalent of the stripe pattern (col. 2, lines 15-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a rectangular pattern, as opposed to a stripe pattern, in forming the bank partitions of Hiroki with a reasonable expectation of success because Yamazaki teaches that either pattern is operable in the art. Substitution of equivalents requires no express motivation (see MPEP 2144.06).

14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rijn '937 in view of Yamazaki '494 for substantially the same reasons as discussed immediately above.

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rijn '937 in view of Fujimori et al. (U.S. Publication No. 2002/0016031).

Van Rijn is discussed above, but does not explicitly teach that the wettability changeable layer has a compound in which a fluoroalkyl group is bonded to a main chain made of silicon

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and oxygen. However, Fujimori teaches that fluoroalkylsilane film can have its wettability changed [0024]-[0025]. Because Van Rijn teaches the need for different wettabilities on the stamp, it would have been obvious to one of ordinary skill in the art at the time of invention to have used a fluoroalkylsilane material on the stamp of Van Rijn with a reasonable expectation of success since Fujimori teaches that such materials are operable for forming a desired wettability.

16. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rijn '937 in view of Hamer et al. (U.S. Patent No. 6,413,548).

Van Rijn is discussed above, but does not explicitly teach that the wettability changeable layer has a silazane compound. However, Hamer teaches that silazane can have adjustable hydrophilic/hydrophobic properties. Thus, the use of such a layer is obvious for substantially the same reasons as discussed immediately above.

17. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rijn '937 in view of Aoki et al. (U.S. Publication No. 2001/0022497).

Van Rijn is discussed above, but does not explicitly teach that the wettability changeable layer has a photocatalyst. However, Aoki teaches that a photocatalyst-containing layer can have its wettability changed [0044]. Thus, the use of such a layer is obvious for substantially the same reasons as discussed immediately above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JL



**KEITH HENDRICKS**  
**PRIMARY EXAMINER**